a1 cont.

an optical element for receiving said light and for illuminating a field adapted to a scanning direction in an image plane; and

a field lens group being provided next to said field,

wherein said field lens group is shaped to distort said field, and

wherein said distortion is perpendicular to said scanning direction.

2 32. The system of claim 1, wherein said field lens group comprises a field mirror.

3 33. The system of claim 1, wherein said field lens group comprises a field lens.

4 34. The system of claim 1, wherein said field lens group provides a predetermined intensity distribution of said field.

5 35. The system of claim 1, wherein said field has an illumination intensity that varies along a direction perpendicular to said scanning direction.

6 36. The system of claim 5, wherein said illumination intensity decreases from a center of said field to an edge of said field.

7 37. The system of claim 5, wherein said illumination intensity increases from a center of said field to an edge of said field.

8 38. The system of claim 1, wherein said image plane has a scanning energy with a uniformity in the range of ± 7%.

a1 cont.

9 39. The system of claim 31, further comprising an aperture stop, wherein said field lens group is shaped so that said aperture stop is imaged in a predetermined exit pupil.

10 40. The system of claim 31, wherein said field has a shape, and wherein said field lens group can change said shape of said field.

11 41. The system of claim 31, wherein said field is rectangular.

12 42. The system of claim 31, wherein said field is a segment of a ring field.

13 43. The system of claim 31, wherein said field lens group has an anamorphotic power.

14 44. The system of claim 31, wherein said field lens group includes a field mirror having a toroidal shape.

15 45. The system of claim 31, wherein said field lens group includes a grazing incidence mirror.

16 46. The system of claim 31, further comprising an optical transforming component for generating a plurality of secondary light sources.

17 47. The system of claim 46, wherein said transforming component includes a mirror having a plurality of mirror elements.

18 48. The system of claim 47, wherein said plurality of mirror elements are field facets, and wherein said field facets are arranged in a plane conjugated to said image plane.

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49. The system of claim 46, further comprising a mirror having a plurality of mirror elements that are located at said plurality of secondary light sources.

a' cont.

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50. The system of claim 31, further comprising:

an optical transforming component, having a first mirror with a plurality of field facets, for generating a plurality of secondary light sources; and

a second mirror having a plurality of pupil facets that are located at said plurality of secondary light sources,

wherein said field facets are imaged into said image plane using said pupil facets and said field lens group.

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51. The system of claim 41, wherein said image plane includes a radial image and an azimuthal image, and wherein said azimuthal image is distorted.

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52. The system of claim 51, wherein said field lens group causes a predetermined azimuthal distortion in said image plane.

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53. The system of claim 46, wherein said field lens group is shaped so that said plurality of secondary light sources are imaged in a predetermined exit pupil.

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54. The system of claim 31, wherein said field lens group includes a field mirror having an actuator to control a mirror surface of said field mirror.

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55. The system of claim 54, wherein said actuator modifies said surface to vary said distortion and to vary an intensity distribution in said illuminated field.

56. The system of claim 55, wherein said distortion is varied by modifying a shape of said mirror surface perpendicular to said scanning direction.

57. The system of claim 54, wherein said image plane is intersected by a centroid ray that changes direction by less than 5mrad when a shape of said mirror surface is changed.

58. The system of claim 54, wherein said actuator is one of a plurality of actuators that are arranged in rows parallel to said scanning direction.

59. A projection exposure system for scanning-microlithography, comprising:

the illumination system of claim 31, wherein said image plane is a first image plane;

a mask on a first support system, wherein said mask is located at said first image plane;

a projection objective to image said mask to a second image plane; and

a light-sensitive subject on a second support system in said second image plane.

60. The system of claim 59, wherein said image plane has a point that is intersected by a centroid ray of said illumination system and a chief ray of said projection objective intersects, and wherein said centroid ray has a direction and said chief ray has a direction with a maximum deviation of ± 10.0 mrad therebetween.

61. The system of claim 59, wherein said second image plane has a scanning energy with a uniformity in the range of ± 7%.